

DERWENT-ACC-NO: 1997-335048

DERWENT-WEEK: 200469

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TITLE: Liquid crystal display manufacturing method -  
involves forming gate electrode in double structure of  
refractory metal film and Al film formed on the upper  
portion and etching Al film which constitutes gate  
electrode prior to forming pixel electrode

INVENTOR: KWEON, Y; KWON, Y C

PRIORITY-DATA: 1996KR-0018516 (May 29, 1996) , 1995KR-0062170  
(December 28,  
1995)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES MAIN-IPC		
DE 69633378 E	October 21, 2004	N/A
000 G02F 001/1345		
EP 782040 A2	July 2, 1997	E
014		
JP 09189924 A	July 22, 1997	N/A
009 G02F 001/1345		
US 5811318 A	September 22, 1998	N/A
000		
KR 97048855 A	July 29, 1997	N/A
000 G02F 001/136		
KR 190041 B1	June 1, 1999	N/A
000 H01L 021/84		
TW 387998 A	April 21, 2000	N/A
000 G02F 001/136		
JP 2004157555 A	June 3, 2004	N/A
013 G02F 001/136		
EP 782040 B1	September 15, 2004	E
000 G02F 001/133		

G02F 001/1368

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G02F001/1345 ,  
G02F001/136 , G02F001/1368 , H01L021/28 , H01L021/3205 ,  
H01L021/336 ,  
H01L021/768 , H01L021/84 , H01L029/423 , H01L029/49 , H01L029/786

ABSTRACTED-PUB-NO: EP 782040A

BASIC-ABSTRACT:

The method involves forming a gate electrode and a gate pad by depositing a first metal film and a second metal film on a substrate of a TFT area and a gate-pad connecting area, respectively, by a first photolithography process.

Then, forming an insulating film on the entire surface of the substrate on which the gate electrode and the gate-pad are formed and forming a semiconductor film pattern on the insulating film of the TFT area by a second photolithography process. Then, forming a source electrode/drain electrode and pad electrode composed of a third metal film using a third photolithography process in the TFT portion and pad portion, respectively.

A passivation film pattern is formed which exposes a portion of the drain electrode, a portion of the gate-pad, and a portion of the pad electrode by a fourth photolithography process. Then, the first metal film is exposed by etching the second metal film which constitutes the gate pad using the passivation film pattern as a mask, and a pixel electrode connected to the drain electrode of the TFT area is formed for connecting the gate pad of the gate-pad connecting area to the pad electrode of the pad area using a fifth photolithography process.

ADVANTAGE - Reduces number of photolithography processes by forming gate electrode in double structure of refractory metal film and Al film formed on

upper portion of refractory metal film, thus sharply reducing manufacturing costs and improving manufacturing yield. Suppresses growth of hillock of Al film due to stress relaxation of refractory metal film and reduces contact resistance between pixel electrode to be formed in following process and Al film by etching Al film which constitutes gate electrode prior to forming pixel electrode.

ABSTRACTED-PUB-NO: US 5811318A

EQUIVALENT-ABSTRACTS:

The method involves forming a gate electrode and a gate pad by depositing a first metal film and a second metal film on a substrate of a TFT area and a gate-pad connecting area, respectively, by a first photolithography process.

Then, forming an insulating film on the entire surface of the substrate on which the gate electrode and the gate-pad are formed and forming a semiconductor film pattern on the insulating film of the TFT area by a second photolithography process. Then, forming a source electrode/drain electrode and pad electrode composed of a third metal film using a third photolithography process in the TFT portion and pad portion, respectively.

A passivation film pattern is formed which exposes a portion of the drain electrode, a portion of the gate-pad, and a portion of the pad electrode by a fourth photolithography process. Then, the first metal film is exposed by etching the second metal film which constitutes the gate pad using the passivation film pattern as a mask, and a pixel electrode connected to the drain electrode of the TFT area is formed for connecting the gate pad of the gate-pad connecting area to the pad electrode of the pad area using a fifth photolithography process.

ADVANTAGE - Reduces number of photolithography processes by forming

gate  
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costs and improving manufacturing yield. Suppresses growth of  
hillock of Al  
film due to stress relaxation of refractory metal film and reduces  
contact  
resistance between pixel electrode to be formed in following process  
and Al  
film by etching Al film which constitutes gate electrode prior to  
forming pixel  
electrode.

CHOSEN-DRAWING: Dwg.6/13